CLAIMS

I CLAIM:

1. A method for detecting an accumulation of an electrostatic charge on an object with an electric charge detector comprising a capacitor, the method comprising the steps of:

(a) causing a periodic variation of capacitance in a capacitor's electrode;

(b) sensing a periodic signal from said electrode;

(c) determining an amplitude of said periodic signal, said amplitude being proportional to the electrostatic charge accumulated on said object;

(d) determining a phase of said periodic signal with respect to a phase of the periodic variation of capacitance ; and

(e) detecting the polarity of the electrostatic charge based on the phase of the periodic signal with respect to the phase of the periodic variation of capacitance.

2. The method of claim **1** additionally comprising the step of initiating a sensory alarm when a magnitude of the detected accumulation of electrostatic charge reaches a threshold.

3. The method of claim **2** wherein the sensory alarm is selected from a group consisting of an audible alarm, a visible alarm, and a tactile alarm.

4. The method of claim **1** wherein the step of causing the periodic variation of capacitance in the capacitor's electrode comprises the steps of:

(a) shielding said electrode behind a faraday shield in which a window is cut; and

(b) exposing a portion of the electrode, periodically, in the window in the faraday shield.

5. The method of claim **4** additionally comprising the step of rotating the electrode on an axis of rotation.

6. The method of claim **5** including a signal generator and an electrostatic motor, the method comprising the additional steps of:

(a) constructing a rotor in a shape of two disk sections, symmetric about a disk's center;

(b) electrically isolating the two disk sections, a first section being the electrode and a second section being an armature of the electrostatic motor;

(c) mounting said rotor to pivot at the disk's center on an axis of rotation, thus causing the electrode of said rotor to sweep out a circle;

(d) mounting the armature of the electrostatic motor in between two sets of two additional plates, each pair of said additional plates located in a quadrant of said swept circle and not blocking the window in the faraday shield; and

(e) applying appropriate, periodic signals to the additional plates to induce resonate mechanical oscillations in the electrode.

7. The method of claim **1** including an ion generator, wherein the method additionally comprises the steps of:

(a) detecting a polarity of electrostatic charge on the object; and

(b) generating ions of a same charge as that of the electrostatic charge on the body.

8. The method of claim **7** wherein the generation of ions is initiated when a magnitude of the electrostatic charge reaches a threshold.

9. The method of claim **4** wherein a wire grid is inserted into the faraday shield's window and energized with a neutralization voltage, an amplitude of the neutralization voltage being proportional to the electrostatic charge on the object.

10. An apparatus for detecting an accumulation of an electrostatic charge, said apparatus being mounted on an object for which the electrostatic charge is to be detected, the apparatus comprising:

(a) an electrode in which a capacitance is varied periodically;

(b) a sensor for sensing a periodic signal from said electrode;

(c) means for determining an amplitude of said periodic signal, said amplitude being proportional to the electrostatic charge accumulated on said object;

(d) means for determining a phase of said periodic signal with respect to a phase of the periodic variation of capacitance ; and

(e) means for detecting the polarity of the electrostatic charge based on the phase of the periodic signal with respect to the phase of the periodic variation of capacitance.

11. The apparatus of claim **10** additionally comprising a sensory alarm, initiated when a magnitude detected accumulation of electrostatic charge reaches a threshold.

12. The apparatus of claim **11** wherein the sensory alarm is selected from a group consisting of an audible alarm, a visible alarm, and a tactile alarm.

13. The apparatus of claim **10** additionally comprising:

(a) a faraday shield for said electrode in which a window is cut; and

(b) means for exposing a portion of the electrode, periodically, in the window in the faraday shield.

14. The apparatus of claim **13** additionally comprising a pivot for rotating the electrode on an axis of rotation.

15. The apparatus of claim **14** additionally comprising:

(a) a signal generator;

(b) the rotor shaped as two disk sections, symmetric about a disk's center, the two sections comprising the electrode and an armature for an electrostatic motor;

(c) a pivot at the disk's center on an axis of rotation, thus allowing the electrode to sweep out a circle when the armature is subjected to electrostatic forces;

(d) two sets of two additional plates, the electrode being mounted between each the two plates in each set, each pair of said additional plates located in a quadrant of said swept circle and not blocking the window in the faraday shield; and

(e) means for applying appropriate, periodic signals to the additional plates to induce resonate mechanical oscillations in the electrode.

16. The apparatus of claim **10** additionally comprising:

(a) a polarity detector for detecting a polarity of electrostatic charge on the object; and

(b) an ion generator for generating ions of a charge opposite that of the electrostatic charge on the body.

17. The apparatus of claim **16** additionally comprising a threshold comparator for determining if a magnitude of the electrostatic charge has reached a threshold at which time the generation of ions is initiated.

18. The apparatus of claim **13** additionally comprising:

(a) a wire grid inserted into the faraday shield's window; and

(b) an energizing source with which to apply a neutralization voltage, an amplitude of the neutralization voltage being proportional to the electrostatic charge on the object.

19. The apparatus of claim **10** including a headband to which the apparatus is mounted.

20. The apparatus of claim **10** including a wrist band to which the apparatus is mounted.